ethmoidal cell and might easily satisfy himself that he had cleaned out the entire frontal sinus without even having entered it.

Fig. 19 is from the other half of the same head as Fig. 18. In this picture an ethmoidal cell is seen to fill completely the frontal sinus of this side.

A CASE OF PARINAUD'S CONJUNCTIVITIS.[1]

By William Campbell Posey, M.D.,
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On October 20, 1898, I was consulted by Dr. X., a surgeon of volunteers, who had just returned from Porto Rico. While there, in charge of one of the hospitals, he had contracted an inflammation of his right eye, which he thought was of a gonorrhœal nature, as many cases of that disease were under his care when the eye became affected. When the eye was first inflamed, he said that the lids were swollen and were bathed in quite a copious mucopurulent secretion. The conjunctiva was also swollen and was studded with granules not unlike those of granular conjunctivitis. The inflammation of the eye, however, was not of the violent type which is usual in gonorrhœal ophthalmia, and did not interfere with his continuing his surgical duties. Washes of boric acid were employed, and the eye was cauterized upon several occasions with nitrate of silver. Notwithstanding this treatment, the inflammation of the eye persisted; the fellow-eye, however, remained unaffected. About three weeks after the appearance of the ocular inflammation a swelling was noticed in one of the small preauricular glands, and shortly after this the parotid gland itself of the same side was found to be affected. Signs of suppuration developing in the gland, an incision was made into it, and exit given to a small quantity of pus. Shortly after this, as the ocular inflammation persisted and his general condition was below par, he was sent home for further treatment.

When first seen by me, six weeks after the first appearance of the ocular symptoms, it was noted that both the upper and the lower lid of the right eye were much swollen, and that their edges were moistened by a slight mucopurulent discharge. Upon eversion of the lids the swelling was found to be occasioned by a marked thickening of the conjunctiva, especially in the folds occupying the fornix of both lids. From these folds were hanging a number of granulations which were much enlarged and were distinctly pedunculated, being at least an eighth of an inch long; between these were smaller granulations, which presented somewhat of a gelatinous appearance. The bulbar conjunctiva was injected and thickened, especially in the region of the caruncle. The cornea was unaffected. A bacteriological study of the conjunctival secretion, which was made by Dr. S. S. Kneass, was negative. The parotid gland was swollen and tense, and the submaxillary and retromaxillary and some of the cervical glands were also enlarged. The patient was admitted to the Presbyterian Hospital, by Dr. Henry R. Wharton, for the purpose of incising the parotid, which was swollen and showed signs of suppuration. This operation was accordingly performed under ether, when it was discovered that the gland had degenerated, though but a small amount of pus was evacuated. Ice compresses were prescribed for the eye, the conjunctival cul-de-sacs were flushed frequently with boric acid solution, and silver nitrate was applied daily. Under this plan of treatment the ocular condition slowly improved and the swelling of the conjunctiva subsided, though the granulations with their long pedicles still persisted. The patient's general condition was, however, poor, his temperature being decidedly elevated, and his condition one of exaggerated depression. Upon this account Drs. Musser and Sailer were placed in charge of the case, and so continued until convalescence was complete, which did not happen until the expiration of three months. A further report of the general medical aspect of the case is unnecessary here, further than to say that it was positively determined by both of these clinicians that Dr. X. was the subject of Malta fever. Their report of the case may be found in the *Philadelphia Medical Journal* for December 31, 1898, and July 8, 1899. It will not be necessary to say more of the ocular condition than that the subsidence of the inflammation and the total disappearance of the granulations were gradually attained after a period of six to eight weeks of active treatment. No scars were left in the conjunctiva, and the eye made a perfect recovery.

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[1] Read before the Ophthalmological Section of the College of Physicians of Philadelphia, October 15, 1904.

There can be no question, I think, but that the case which has just been reported is an instance of that rare variety of conjunctival disease known as Parinaud's or infective conjunctivitis. The first description of this form of disease was given by this distinguished French ophthalmologist in 1889, before the Ophthalmological Society of Paris. Since then a few other communications have been made upon the subject, although now, fifteen years after the description of the disease, the literature contains but twenty-three cases. Although a very comprehensive paper upon this subject by Chaillous, in the *Annales D'Oculistique*, of January of this year, and its able review and translation by Mr. Elmore Brewerton in the *Ophthalmic Review* of last May, and a very recent article by Verhoeff and Derby,[1] render any attempt of mine at a detailed study of this form of conjunctivitis and its literature unnecessary, it may not be amiss, in view of the fact that the disease is almost entirely unknown in this country, and as the cases reported before the section to-night are, as far as I know, the first which have been seen in this city, to mention a few of its chief characteristics.

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[1] Archives of Ophthalmology, July, 1904.

The first symptoms are those of a mild case of granular or purulent conjunctivitis. The secretion is not very abundant, the lids are swollen, the conjunctiva thickened, and granulations appear, which are at first small and semitransparent, then become yellowish and later red and opaque. In most cases some of the granulations assume a polypoid character, and may attain one-quarter of an inch or more in length. These granulations, hanging chiefly from the fornix, present a most striking appearance, and form one of the characteristic features of the disease. If the granulations be separated with a probe small erosions will be found lying between them, as well as minute yellow granules, which resemble those seen in tuberculosis of the conjunctiva. The bulbar conjunctiva is injected and often œdematous. The cornea is unaffected and the disease is almost always confined to one eye. Shortly after the ocular symptoms manifest themselves, although in a few cases preceding them the preauricular and parotid glands and at times the submaxillary and retromaxillary glands of the same side as the affected eye become swollen and indurated, and not rarely break down and suppurate. The general system always shows signs of depression, and there is some fever throughout the course of the affection; its onset may be inaugurated by a distinct chill. The disease is essentially chronic, both ocular and granular symptoms persisting and resisting treatment for weeks and months, though if left to itself it will undergo spontaneous cure without leaving scars in the conjunctiva. But little pain is experienced, either from the swollen lids or the enlarged glands. The disease is non-contagious.

The symptoms of the disease are so striking that it cannot readily be confused with any other form of conjunctivitis, except perhaps tuberculous conjunctivitis. It simulates this latter disease very closely, and though the simultaneous involvement of the glandular system, and the peculiar pedunculated character of the granulations in some cases, and the rather characteristic erosions which occur between the granulations, will usually enable the diagnosis to be made from tuberculous conjunctivitis without any great difficulty, yet in other cases the result of histological examinations and of experimental inoculations will have to be obtained to make the differentiation absolute. Though bearing a certain resemblance to trachoma, it can easily be differentiated from that form of conjunctivitis by the more diffuse character of the infiltration, the length of the granules, the non-affection of the cornea, and the involvement of the glandular system.

Although the small number of cases which have been thus far recorded renders any conclusions regarding the nature of this peculiar form of conjunctivitis of no great value, it is of interest to note that from the analysis of the twenty-three hitherto reported cases, Verhoeff and Derby found that the disease has thus far been observed only in the temperate zone and in climates not differing to any marked extent; that autumn seems to present the most favorable conditions for its development; that the sexes are affected equally often; that the age limits range from two to fifty-nine years; that the right eye was affected twice as often as the left.

The origin of the affection is still unknown. Parinaud thought that it originated from decayed animal matter and termed it "infective conjunctivitis," but as this observation was based solely upon the coincidence of the disease originating in some of the cases observed by him in subjects who were more or less exposed to infection of such a source, and though a possibility of infection under similar conditions has been reported by others, yet the bacteriological proof of this, though carefully and repeatedly searched for, has not been found. Gifford, who has reported five cases of the affection and has recently written me that he has seen four or five additional, does not believe that Parinaud's grounds for his belief are sufficient; and Chaillous, while he admits the probability of the infective nature of the process, suggests that the variations which are observed in the localization of the affection, in the vegetations and erosions, and in the reactions of the lymphatic system, indicate the action of varied infective agencies. Verhoeff and Derby, who have made a most careful bacteriological and histological examination of their case, and who have studied the literature of the affection with particular care to the elucidation of this point, conclude that the theory of animal origin is grounded upon insufficient evidence, and that the agent which produces the local lesion is non-pyogenic, and that suppuration, if it does occur, is probably due to secondary infection. They regard Parinaud's suggestion of foot-and-mouth disease as the source of the infection as purely hypothetical, although they mention as a rather striking fact that Parinaud's conjunctivitis has been reported only in France and America, countries in which foot-and-mouth disease is especially prevalent. They state that, moreover, five of the American cases occurred in cattle-raising sections, and one in Boston, a seaport from which cattle are exported in great numbers. The case reported by them gave no history of animal contact, but foot-and-mouth disease had recently made its appearance for the first time in years in the vicinity of the town in which the patient lived.

The pathological anatomy of the affection is also still in doubt. Gifford believes that the infection starts with the formation of small abscesses in or below the conjunctiva; that these abscesses break, a profuse discharge follows, and the granulations develop from the edges of some of the ulcerations left by the abscesses. Verhoeff and Derby deny this, and believe that the primary lesion in this form of conjunctivitis is superficial, being confined almost exclusively to the subconjunctival tissue, and consists essentially in cell necrosis, followed by proliferation of connective tissue.

Treatment consists in antiseptic lotions and cauterization with silver or copper. When the granulations are large excision may be practised, and when the disease is very chronic and the swelling of the lids extreme and resistant, searing with the actual cautery may be necessitated. Alterative ointments should be applied to the affected glands, and if suppuration threatens, hot compresses, followed by incision and drainage.[1]

In the discussion following the reading of the paper the author stated that last winter he had had an opportunity of seeing a case of the disease, occurring in the practice of another oculist. This case was also that of a physician whose right eye became affected in a manner typical of the form of conjunctivitis under discussion. The swelling of the lids and the development of the polypoid granulation were, however, excessive, and the cornea became ulcerated, probably as a result of mechanical irritation. The course of the case was exceedingly chronic, as he understood that even now, a year after the initial symptoms had appeared, the granulations were still present.

He thought it of interest to note, in connection with the pathogenesis of Parinaud's conjunctivitis, that this case occurred in a physician who was a rectal specialist, that the first case occurred in a surgeon in hospital practice in Porto Rico, where the sanitary arrangements were most imperfect, and that the father of the child presented by Dr. Thomson was employed in handling fertilizer. Although bacteriological studies have failed to isolate the germ of this disease, he thought that the glandular involvement and the symptoms of general systemic depression all pointed to its being an infective process. He thought that the more frequent involvement of the right eye indicated that the toxic substance originating the inflammation was probably carried to the eye by the hand, and that, although bacteriological proof was wanting, he believed the coincidence of a possible source of animal infection to be present in too many cases, not to admit the probability of the disease being, as Parinaud first stated, originated in that way.

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[1] Since the reading of this paper, the report of an additional case of Parinaud's conjunctivitis has appeared in the Ophthalmic Review, October, 1904, by Stirling and McCrae. Pure cultures of bacillus resembling Klebs-Loeffler bacillus were found, which led the authors to conclude that they were dealing with either a virulent form of bacillus xerosis or one less toxic than ordinary bacillus diphtheriæ.